CEDAR CHEMICAL CORPORATION

FINAL REPORT, DRUM REMOVAL PLAN

CONSENT ADMINISTRATIVE ORDER LIS 91-118

JANUARY 15, 1992

REPORT OF REMEDIAL ACTION ACTIVITIES
REMOVAL OF BURIED DRUMS AND CONTAMINATED SOIL
CEDAR CHEMICAL CORPORATION PLANT
WEST HELENA, ARKANSAS

INTRODUCTION

Cedar Chemical Corporation (Cedar) has undertaken remediation of an old drum burial pit on its plant location in West Helena, Arkansas in accordance with Consent Administrative Order No. LIS 91-118, dated July 9, 1991, between Cedar and the Arkansas Department of Pollution Control and Ecology (ADPC&E). Buried drums and their contents, along with contaminated soil in their vicinity were removed from the pits in general accordance with procedures outlined in the previously approved Removal Action Work Plan, dated June 1990, prepared by Woodward-Clyde Consultants.

This report has been prepared by Cedar in accordance with paragraph 10.b of the CAO to describe the activities undertaken to implement the Removal Action Work Plan. Certification of this report, confirming that the remediation was conducted in accordance with the Removal Action Work Plan is provided by a registered professional engineer, familiar with the work.

DESCRIPTION OF REMEDIAL ACTIVITIES

Mobilization and Site Preparation

Cedar contracted Chemical Waste Management, Inc., through its Environmental Remedial Action Division (CWM-ENRAC), to execute the construction tasks necessary to implement the Removal Action Work Plan. CWM-ENRAC prepared and operated under a written health and safety/environmental management plan (see Enclosure 1), and all its personnel were trained for hazardous site operations per OSHA regulations (29 CFR 1910.120). CWM-ENRAC mobilized a crew of four, including a project manager, chemist, equipment

operator and technician. A track-mounted hydraulic excavator (trackhoe) was also mobilized by CWM-ENRAC. Cedar provided a forklift for drum and pallet handling.

On-site remedial activities began on October 1, 1991. The approximate location of the old burial pit was delineated based on the results of a geomagnetic survey that had previously been conducted by Woodward-Clyde Consultants. The pit area was believed to intersect an existing storm water culvert near the pit's western end, so the boundaries of the pit as indicated in the survey were reconciled with this and other existing landmarks to establish a unit area of contamination. Most of the delineated area of the old pit was lain beneath an asphalt paved roadway surrounding the process area.

The outlet to a storm water inlet/junction box upstream from the roadway feeding the culvert was blocked off, and a pump system was set up to remove water flowing into it to bypass the culvert adjacent to the delineated burial pit. Down stream from the culvert, the storm water ditch was dammed up to prevent release of contaminated liquid from the burial pit as it was excavated.

An exclusion zone was established within the unit area of contamination in which to proceed with the remedial construction. A contaminant reduction zone or corridor was established outside and around the exclusion zone to control access by plant personnel and other personnel not outfitted with appropriate personal protective equipment. Within the contaminant reduction zone, a sample handling station and personnel decontamination station were set up. At a minimum, Level C PPE, including Saranex-coated coveralls and half-face respirators were used inside the exclusion zone until the level of air emissions could be established.

A representative of ADPC&E, Mr. Jay Freibolt, was present on-site during the initial few days of site activity. Mr. Freibolt took photographs of the work from several vantage points outside the exclusion zone to document the work. The reader is referred to ADPC&E files for viewing of these photographs. Cedar also took live video footage of portions of the site operations. The video documentation is available from Cedar upon request.

Investigation and Waste Characterization

The previous investigation work conducted by Woodward-Clyde Consultants only identified the approximate location of the pit and general extent of buried metallic materials. It was decided that additional data was needed to establish the depth and contamination levels of overburden soils as well as to identify all the likely hazardous waste codes which may be applicable. Such characterization was necessary to profile the contaminated materials and obtain disposal approval at a secure hazardous landfill or other appropriate off-site hazardous waste management facility. Furthermore, it was desirable to determine if some of the overburden was not contaminated, so that it could be stockpiled on-site and used for backfill.

Three test pits were dug on October 1 and 2 within the exclusion zone at the locations indicated on the drawing in Enclosure 2 to facilitate this additional characterization of the overburden soil. Test Pit No. 2 was excavated down until drums were encountered. The excavated material was temporarily stockpiled on plastic sheeting within the area of contamination. If the soil was contaminated, then such placement would not trigger land disposal restrictions, since all the materials below the stockpile would be subsequently removed as well. If the soil was not contaminated, then no triggering of land disposal restriction would occur either.

Composite samples of the test pit sidewalls were taken at 2-ft depth intervals. The samples were taken to and analyzed by Cedar's on-site laboratory. All sampling tools and compositing bowls were purchased new for the job and were decontaminated prior to and between each use. The decontamination procedure involved a soap and wash, and consecutive rinses of water, isopropyl alcohol and distilled water. Cedar provided lab-cleaned glass mason jars for the samples.

Cedar's laboratory only analyzed the test pit samples for the Dinoseb compounds using a high plasma liquid chromatography (HPLC) method described in Enclosure 3. This is the same method used in the previous investigations by Woodward-Clyde Consultants. The

Removal Action Work Plan indicated that such on-site analysis was approved. This method is actually more sensitive for Dinoseb than standard EPA-approved methods. The analytical results of the lab analyses on the test pit overburden soils are also presented in Enclosure 3 and indicate that all samples were above the detection limit of 10 ppb.

Two samples were also selected and sent to an outside laboratory, Entek Laboratories in Little Rock, for independent analyses for volatile and semi-volatile organic compounds (SW-846 Methods 8240 and 8270, respectively). These results are presented in Enclosure 4.

Since all the overburden soils appeared to have been affected by contamination, it was determined that there was no need to attempt segregation of contaminated and non-contaminated soils. The results of the test pit analyses and previous results were used to identify hazardous waste codes that may be appropriate. RCRA hazardous waste codes P020, U070, U220, U239 and U247 were identified on the generator's waste profile sheet as being potentially applicable to the waste. Contaminated soils and debris with these waste codes were all subject to a variance to the land disposal restrictions until May 8, 1992 and thus could be landfilled without prior treatment. This waste stream was profiled and approved at Chemical Waste Management's hazardous landfill in Carlyss, Louisiana. The profile was modified several times concurrently with the removal as new compounds or waste items were encountered. Enclosure 5 presents the profile form representing the waste sent to the landfill.

Waste Removal and Handling

The asphaltic pavement within the unit area of contamination was stripped away and accumulated for disposal along with the overburden soils. The concrete culvert at the presumed end of the burial pit running under the roadway was also removed. The drums had been originally discovered when the culvert was installed, and it was presumed that the culvert was also contaminated. The culvert was set aside to be decontaminated; however, it was later decided by Cedar to go ahead and dispose of it also as a hazardous waste.

Full-scale excavation of the overburden first proceeded from the eastern end of the delineated burial pit location. As the overburden was removed, the walls of the pit were sloped back to maintain stability of the excavation. The first drums were removed on October 3. The drums were found randomly placed in the pit rather than stacked, appearing to have been dumped in and run over by equipment as the pit was backfilled. Removal of each drum required individually wrestling the drum out of the pit using a harness after some manual digging of soil from around the drum.

The condition of the drums varied, but most of them were damaged when found and further damaged as they were lifted. Many drums were found leaking as evidenced by contamination in the surrounding soil detected by portable vapor analyzers. Because of their condition and to minimize release of the contents, each drum was transferred as quickly as possible into an over-pack container before it was lifted out of the pit by the trackhoe.

Many of the drums were found to be crushed, rusting, and completely empty. As such, these empty drum carcasses were considered to be debris rather than waste containers. Accordingly, these empty carcasses became part of the soil and debris, designated and profiled for disposal at the landfill. Subsequent characterization and management of the removed drummed waste is discussed later in the report.

The drum removal activity continued until the bottom of the burial pit could be found. As the excavation got deeper, the breadth and length of it also increased. Beginning on October 7, the excavated materials within the exclusion zone were loaded into trucks and transported for disposal at the landfill. Transportation and disposal of the wastes are discussed in a subsequent section.

After the easternmost limits of the old burial pit were confirmed, the removal work continued toward the west. The soil along the side walls and bottom was scraped to a point well past where drums were encountered and also past any point where discoloration of the

soil was visible. Preliminary sampling and analyses of the bottom soils indicated that the residual level of Dinoseb contamination was about 25 ppm.

On October 27, work progress was hampered by rain and it was decided to suspend work until the weather improved. That portion of the overburden soil yet to be removed was covered with plastic sheeting as a means to minimize wetting and infiltration of rainwater. Furthermore a short run-on diversion berm of clean soil was placed around the perimeter of the excavation to prevent excess rainwater from filling into the open excavation.

Over the period of October 27 to 29, the rainstorm upstream from the bypass of the culvert overflowed the plant's drainage system, far exceeding the capacity of the bypass pumps. This resulted in the storm water emptying into and partially flooding the open excavation. CWM-ENRAC was instructed to temporarily demobilize on October 30 while Cedar negotiated the appropriate handling of the water with ADPC&E. On November 8, ADPC&E authorized Cedar to pump this water through its biotreatment system. Cedar personnel and equipment were used to pump out the flooded excavation and were finished prior to remobilization of CWM-ENRAC's forces on November 12.

Additional soil softened by the standing water and sloughing from the side walls was removed prior to resuming drum removal on November 14. Removal of all the drums encountered was completed by November 17, and contaminated soil removal continued until November 22. The final size of the excavation was approximately 30 ft wide (north to south) by 90 ft long by 17 ft deep. A total of 176 drums containing waste materials were removed from the burial pit along with another 100 empty drum carcasses.

Transportation and Disposal

Transportation was provided through CWM-ENRAC by a subcontract transportation firm, C.W. Penn and Sons. CWM-ENRAC utilized a clean road method of loading where the truck wheels and undercarriage were prevented from contact with contaminated areas from within the unit area of contamination. End-dump trailers were used exclusively, and each

was lined with a polyethylene bed liner prior to waste loading. Each individual load was accompanied by a Louisiana hazardous waste materials manifest signed by a representative of Cedar.

The trucks were transported over a DOT-approved hazardous materials haul route to Chemical Waste Management's hazardous landfill facility in Carlyss, Louisiana. Each load was inspected to insure conformance with the approved profile, then emptied into an active landfill cell. Approximately 1890 tons of soil and debris, including about 100 empty drum carcasses, were disposed of at the hazardous landfill. Following emptying, each truck was inspected for residual waste in the bed, then the wheels and undercarriage were decontaminated at the truck wash before the truck left the facility. Copies of the returned manifests, showing the measured weights of the waste disposed are available for review upon request.

Verification Sampling

As previously indicated, some preliminary sampling was conducted on the soil from the bottom of the excavation concurrently with the removal work to determine if additional contaminated soil above the target cleanup standard needed to be removed. None of these results indicated Dinoseb concentrations over 25 ppm. The health-based cleanup standard was set at 80 ppm in the Removal Action Work Plan.

At the conclusion of the drum and soil removal, soil samples were taken in accordance with paragraphs 6.1 and 6.2 of the Work Plan for official verification that the residual level of Dinoseb contamination was below the 80 ppm standard. At three locations, samples were taken from the bottom of the excavation, two approximately 10 feet from the ends and one from the middle of the hole, each along the centerline of the excavation. At each location, four discrete samples were obtained from within an 18-inch square area to a depth of six inches. A JMC Soil Sampler with freshly decontaminated liner tubes was used to obtain the grab samples.

The discrete samples were combined into two composite samples from each location for which one each was analyzed by Cedar and the other was provided to ADPC&E. The verification analyses were conducted at Cedar's on-site laboratory using the same HPLC methods previously discussed in Enclosure 3. Sample collection and handling procedures for the 3 verification sample sets are explained in Enclosure 6. The results of the verification analyses is presented in Enclosure 7. These results showed residual soil contamination values of 6.0 ppm, 10.0 ppm and 31.8 ppm, respectively for Sample Nos. 1, 2 and 3, and the results confirm that all residual levels of Dinoseb contamination in the soil are well below the 80 ppm cleanup standard.

Backfilling

After verifying that the cleanup standard had been achieved, CWM-ENRAC proceeded to backfill the excavation with clean soil. Soil was imported from an off-site location and offloaded at the edge of the excavation. Initial placement of backfill soil was done using the trackhoe because of the depth of the excavation. The trackhoe was used to provide compaction by tamping the bucket on the placed soil. Once the soil was backfilled to a safe depth, and all previously contaminated areas had some clean fill placed over them, the supplier of the soil used his own dozers to spread and compact the clean soil. The soil supplier also replaced the culvert in its original position. The soil was backfilled to a subgrade elevation consistent with the rest of the roadway, then Cedar contracted a local pavement contractor to complete repairs to the road. Backfilling, and essentially the closure of the burial pit area, was complete on November 27, 1991.

Handling and Dispensation of Drummed Materials

As previously stated, each drum containing waste materials was overpacked before it was lifted out of the excavation. Each overpack container was placed on pallets within the contaminant reduction zone, then transferred to a temporary storage area at the plant. Each container was sequentially numbered, labelled with a hazardous waste label, and dated as to when it was removed, marking the day temporary storage began for that particular

container. Ninety-day temporary storage for the first drum began October 3.

Initially, samples were taken from each of the first 20 drums as it was removed from the excavation to begin identifying and characterizing the wastes for subsequent disposal. This process proved too time consuming for the remedial team, and a decision was made by Cedar to sample all the remaining drums only after all of them had been removed. It was apparent that Dinoseb or formulation compounds from the Dinoseb, as evidenced by the characteristic color and odor, was present in all the containers encountered. Thus, the rationale was that since all the wastes found would likely require incineration because of the Dinoseb, the wastes would be bulked together for disposal; therefore, individual characterization would not be necessary or expedient. Instead, composite samples of different phase materials from all the drums were obtained for waste profiling.

Concurrently with the backfilling operations, sampling of the latter 156 drums removed commenced on November 23. As samples were taken, descriptions of the material, its phase, and the approximated volume in each drum were recorded. Representative samples of solid and liquid phases from the drums have sent to Chemical Waste Management's RCRA incinerator facility in Port Arthur, Texas for profiling. Additionally, the empty drums have been profiled at Chemical Waste Management's RCRA-authorized storage and service facility in Millington, Tennessee to be shredded and repacked. The repacked drum carcasses will also be incinerated. Further management and disposal of these waste streams will begin shortly as soon as they have been approved at the disposal facilities.

Tear-Down and Demobilization

At the completion of all contaminated work, and before backfilling began, the trackhoe was thoroughly decontaminated. After backfilling, the trackhoe was cleaned and returned to the leasing company. Following the initial placement of backfill soil, the exclusion zone was disestablished. CWM-ENRAC demobilized from the plant on November 26, 1991. Backfilling by the soil supplier was completed on November 27, 1991.

ENCLOSURE (2)

TEST PIT LOCATIONS

NT

PLANT

SUBJECT Cedar Chemical Sampling Grid
Job No. 73379
Ref. BURIED DRUMS
Made by Brian
Checked
Reviewed
Date 10/11/91
Sheet 1 of 1

CWM-ENRAC

REFERENCE POINT

ABOVEGROUND TANKS	1	2	3	4	5	6	7	8	9	10	11
A											
B			PIT 3			PIT 2		PIT 1			
C										PID READINGS ≈ 80 ppm	
D			≈ DEPTH 4' PID READING ≈ 80 ppm			≈ DEPTH 8' PID READING ≈ 80 ppm		≈ DEPTH 5'			
E											
F											
G											

CULVERT

10 X 10 MATRIX